# English Version

Visit our website (www.zalman.co.kr) and watch the RESERATOR 1 Plus installation video for an installation overview.

※ Please read this manual thoroughly before installation.

※ The specifications of this product and its components may change without prior notice to improve the performance thereof.

# Installation and Operational Notes

## Installation Notes

1. Make sure that the power source's output voltage and frequency are compatible with the power input requirements of the water pump before installing. (Input voltage and frequency of the water pump are shown on the box and sink cover.)
2. Do not place in dusty or humid conditions, under direct sunlight, or near a heat source such as a room heater.
3. Do not drop or subject to excessive force.
4. CPU socket compatibility must be checked.
5. Familiarize yourself with this manual.
6. Do not mix any contaminant with the coolant when filling, for it may cause product failure.
7. Check for leaks on water block(s) before the installation.

## Operational Notes

1. Use a power strip with a power switch, and connect both PC and Reserator 1 Plus to the power strip to allow simultaneous power ON/OFF switching.
2. Always turn on the water pump first before using the system.
3. If the coolant isn't circulating or the pump is making a strange noise, turn the PC OFF immediately.
4. Do not place any objects on the product.
5. Install on a flat surface with no vibration or slant, and do not tilt or lay horizontally.
6. Use distilled water for coolant, regularly check the amount of coolant, and replenish as needed.
7. If a leak is found, turn off the system immediately and examine the problem before using the system again.
8. If the system will not be used for an extended period of time, turn the Water Pump OFF.
9. When moving the system, separate the reserator from the PC case before moving.
10. Do not let any air bubbles form in the Water Block and tubes during operation.
11. Always check that the water pump is functioning properly.

## Disclaimer

Zalman Tech Co., Ltd. is not responsible for any damages due to external causes, including but not limited to, improper use, problems with electrical power, accident, neglect, alteration, repair, improper installation, or improper testing.

English

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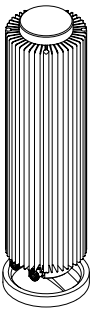
## 1. Features

The Reserator 1 Plus incorporates Zalman's HCET(High Capacity Extrusion Technique) technology, high efficiency cooling technology, and optimal heat dissipation design for exceptional cooling performance even through natural convection cooling .

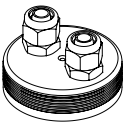
The Reserator 1 Plus is a fanless water cooling system that unites the functions of a reservoir, radiator, and water pump into one system for easy operation. It is anodized and comes with a custom coolant to prevent corrosion. The new CPU Water Block (ZM-WB3 Gold), VGA Water Block(ZM-GWB2), and the optional Northbridge Water Block(ZM-NWB1) enable the setup of a complete Water Cooling System with excellent performance.

### 1. 1 Reserator (Reservoir + Radiator + Water Pump)



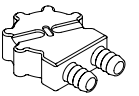
"Reserator" is a compound word derived from 'Reservoir' and 'Radiator'- it acts as a reservoir while radiating heat. This product works well with natural convection and integrates a water pump inside for convenience.

### 1. 2 CPU Water Block (ZM-WB3 Gold)



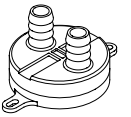
The CPU Water Block incorporates a pure copper base for excellent heat transfer, and has gold plating to prevent corrosion. It supports Pentium 4 Socket 775/478 CPU & AMD Socket 462/754/939/940 CPU, and is designed to be lightweight and easy to install.

### 1. 3 VGA Water Block (ZM-GWB2)



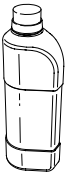
The VGA Water Block incorporates a light weight pure aluminum base for high cooling performance, and is anodized and coated to prevent corrosion. RAM heatsinks are included for a complete video card cooling solution. The VGA Water Block can be installed on graphics cards with heatsink mounting holes.

### 1. 4 Northbridge Water Block (ZM-NWB1, Optional)



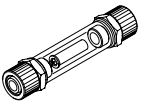
This anodized, pure aluminum block is built for high performance cooling, and is designed for compatibility with a wide variety of northbridge chipsets.

### 1. 5 Anti-Corrosion Coolant (ZM-G100)



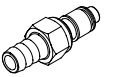
This coolant contains a high quality anti-corrosion agent for various materials including copper, aluminum, and plastic, that prevents corrosion for long term operation.

### 1. 6 Flow Indicator



This component is connected in-line with the circulation tube for checking the circulation of the coolant. When the coolant is actively circulating, the cap inside the flow indicator shakes rapidly, providing easy indication of the circulation status.

### 1. 7 Quick Coupling



The Fittings incorporate valves that prevent leaks when disconnecting the Silicone Tubes allowing quick, convenient separation and reassembly of the Reserator for transport and coolant replacement .

## 2. Specifications

### 2. 1 Reserator (Reservoir + Radiator + Water pump)

1) Dissipation Area : 1.274㎡
2) Weight : 6.5 kg
3) Dimensions : 150(L) x 150(W) x 592(H) mm
4) Material : Anodized Pure Aluminum
5) Coolant Capacity : Max. 2.5 ℓ
6) Integrated Water Pump : 5 W, Qmax 300 ℓ/h
   (A type : 230V-50Hz, B type : 120V-60Hz, C type : 220V-60Hz, D type : 110V-60Hz)
7) Maximum Lift : 0.5 m

### 2. 2 CPU Water Block (ZM-WB3 Gold)

1) Weight : 260 g (Block Only)
2) Material : Pure Aluminum Cover, Gold Plated Pure Copper Base
3) Dimensions : ø 60 x 20(H) mm
4) Compatibility : Intel Pentium 4 (Socket 775/478), AMD Duron / Athlon / Athlon XP / Sempron(Socket 462), AMD Sempron / AMD64 (Athlon 64/Athlon 64 FX/Opteron) (Socket 754/939/940)

### 2. 3 VGA Water Block (ZM-GWB2)

1) Weight : 60 g
2) Material : Anodized Pure Aluminum
3) Dimensions : 63(L) x 40(W) x 20(H) mm
4) RAM Heatsinks : Pure Aluminum, 8 pieces
5) Compatibility : Graphics cards with heatsink mounting holes

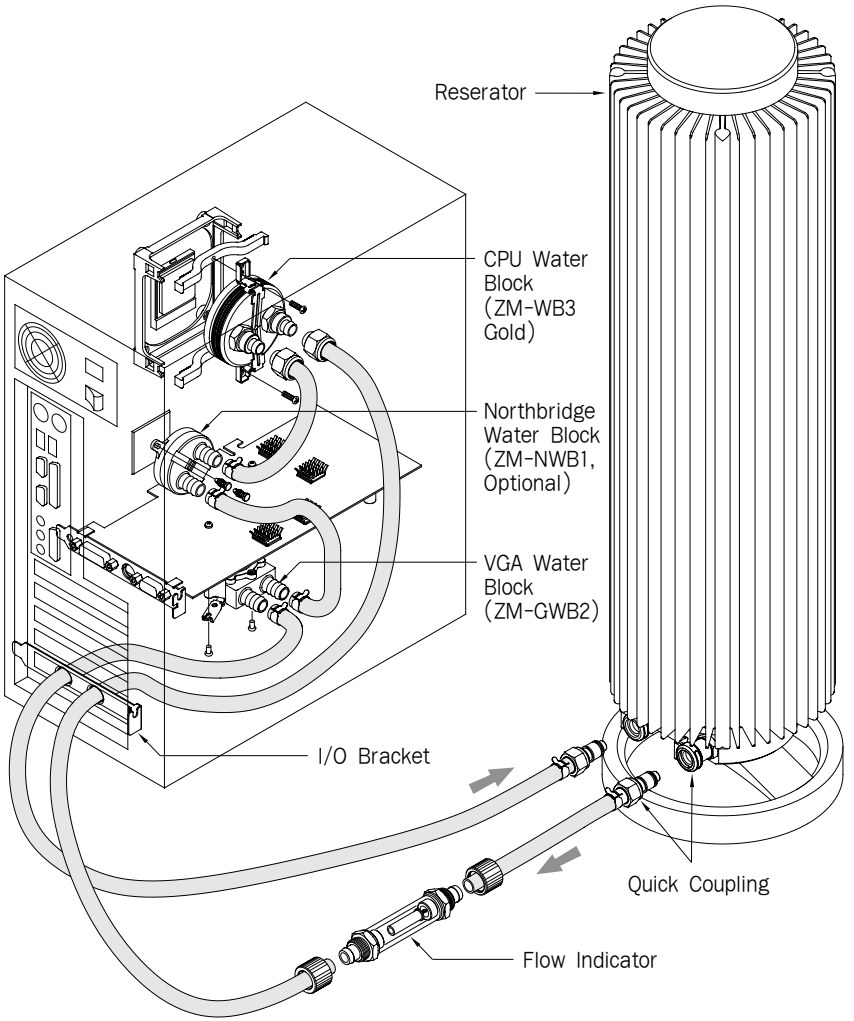
### 2. 4 Northbridge Water Block (ZM-NWB1, Optional)

1) Weight : 48 g
2) Material : Anodized Pure Aluminum
3) Dimensions : ø 43 x 30(H) mm

### 2. 5 Anti-Corrosion Coolant (ZM-G100)

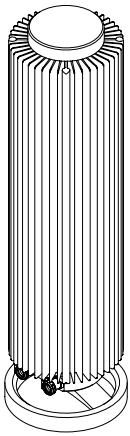
1) Material : Ethylene Glycol & Anti-Corrosion Agent
2) Weight : 500 ml
3) Freezing Point : -9 ℃
4) Exchange Cycle : 1 year

## 3. Installation Overview



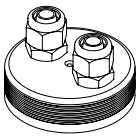
## 4. Components

### 4. 1 Reserator 1 Unit



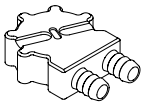
### 4. 2 CPU Water Block(ZM-WB3 Gold) 1SET

Please refer to the separately provided manual for the ZM-WB3 Gold.

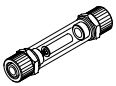


### 4. 3 VGA Water Block (ZM-GWB2) 1SET

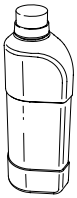
Please refer to the separately provided manual for the ZM-GWB2.



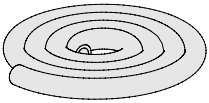
### 4. 4 Flow Indicator 1EA



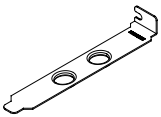
### 4. 5 Coolant (ZM-G100) 1EA



### 4. 6 Silicone Tube 4m



### 4. 7 I/O Bracket 1EA



### 4. 8 Quick Coupling Insert 2EA

### 4. 9 Tube Clamp 2EA

### 4. 10 Spare Parts

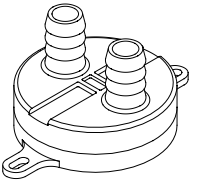
Sealing Bolt 1EA

Cable Fitting 1EA

## Optional Components

- **Northbridge Water Block (ZM-NWB1)**

  This anodized, pure aluminum block is built for high performance cooling, and is designed for board compatibility with a wide variety of northbridge chipsets.

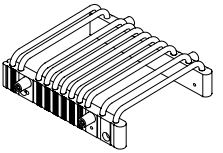


- **Power Supply**

  By implementing heat-sensor circuitry that controls the fan's speed in relation to the temperature within the power supply, noise is significantly reduced, making this component suitable for noiseless systems.

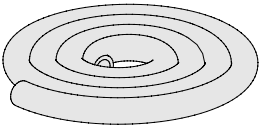
- **Heatpipe HDD Cooler**

  This component cools the heat generated from the hard disk drive and reduces the vibration that is passed onto the computer's enclosure.



- **Silicone Tube**

  If the standard silicone tube is found to be short or you need to use the tube on another system, additional tubes can be purchased separately (4m, 12 x 8 mm).



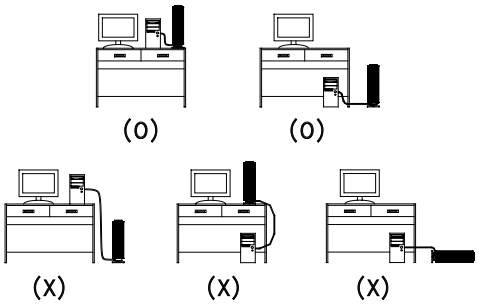
## 5. Installation Guide

### 5. 1 Check for Leaks

Before installing the product on a PC, check each water block and the reserator for leaks.

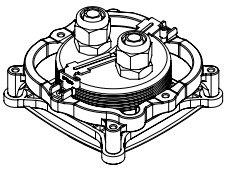
### 5. 2 Determine the Placement of the Reserator

The reserator's placement should be determined in relation to the position of the PC. Place it upright next to or slightly above the PC. Note that if the Reserator is placed lower than the PC, the silicone tube's internal air pressure may prevent proper initial operation.

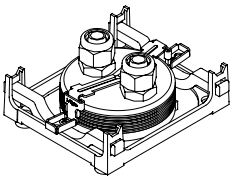



### 5. 3 Install the CPU Water Block (ZM-WB3 Gold)

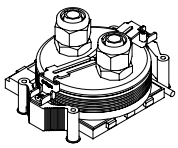
1) Refer to the manual included with the ZM-WB3 Gold for installation instructions.
2) The ZM-WB3 Gold is compatible with Socket 775, 478, 462, 754, 939, and 940.
3) If physical interference occurs while installing the water block, stop the installation.



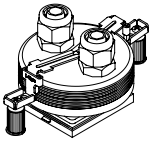
Intel Pentium 4
Socket 775 CPU



Intel Pentium 4
Socket 478 CPU



AMD Duron/Athlon/
Athlon XP/Sempron
Socket 462 CPU



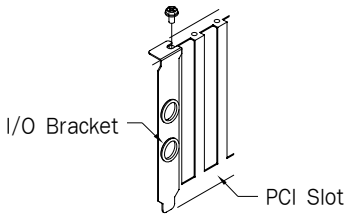
AMD Sempron/AMD64
(Athlon 64/Opteron)
Socket 754/939/940 CPU

### 5. 4 Install the VGA Water Block (ZM-GWB2)

1) Refer to the manual included with the ZM-GWB2 for installation instructions.

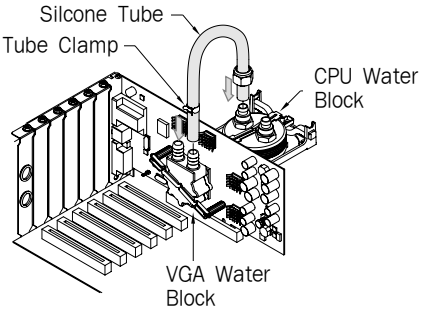
### 5. 5 Install the I/O Bracket

1) As shown in the diagram, install the I/O bracket on a PCI slot on the computer case.
   ※ I/O Bracket should be installed at the lowest possible slot.



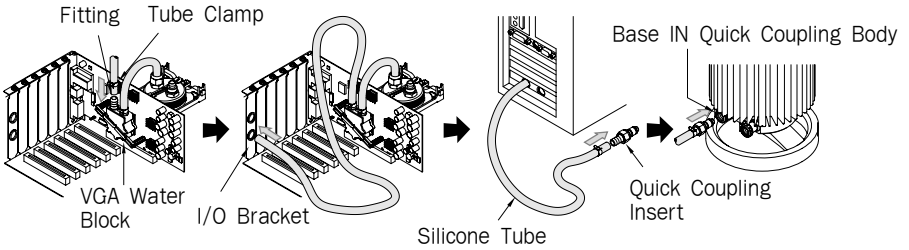
### 5. 6 Connect the CPU Water Block and the VGA Water Block

1) As shown in the diagram, connect the two water blocks with a silicone tube.



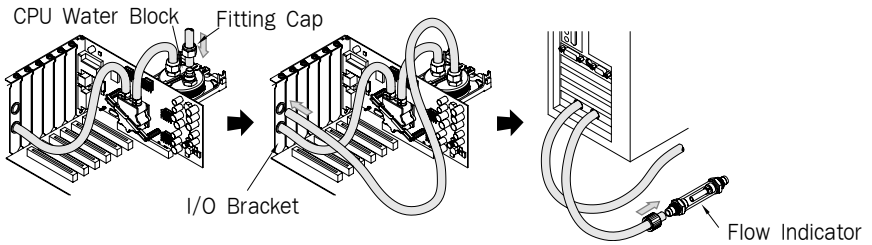

### 5. 7 Connect the VGA Water Block with Reserator's Base IN

1) As shown in the diagram, connect one end of the Silicone Tube to the VGA Water Block Fitting and fasten with a Tube Clamp.
2) Pull out the Silicone Tube through the I/O Bracket hole on the computer case.
3) Connect a Quick Coupling Insert to the other end of the Silicone Tube and clamp with a Tube Clamp.
4) Plug the Quick Coupling into the Reserator's Base IN fitting.



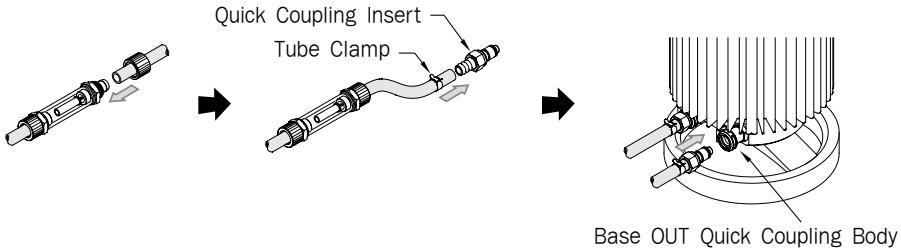

### 5. 8 Connect the CPU Water Block with the Flow Indicator

1) As shown in the diagram, connect one end of the Silicone Tube to the CPU Water Block fitting and fasten with a Fitting Cap.
2) Pull out the Silicone Tube through the tube hole on the I/O Bracket.
3) Connect the Flow Indicator on the other end of the Silicone Tube.
   The Flow Indicator should be installed in the direction as shown in the diagram.



### 5. 9 Connect the Flow Indicator with the Reserator's Base OUT

1) Connect one end of the Silicone Tube to the Flow Indicator.
2) Insert a Tube Clamp to the other end of the tube, connect a Quick Coupling Insert, then fasten with the Tube Clamp.
3) Connect the Quick Coupling to the Quick Coupling Body on the Reserator's Base OUT.

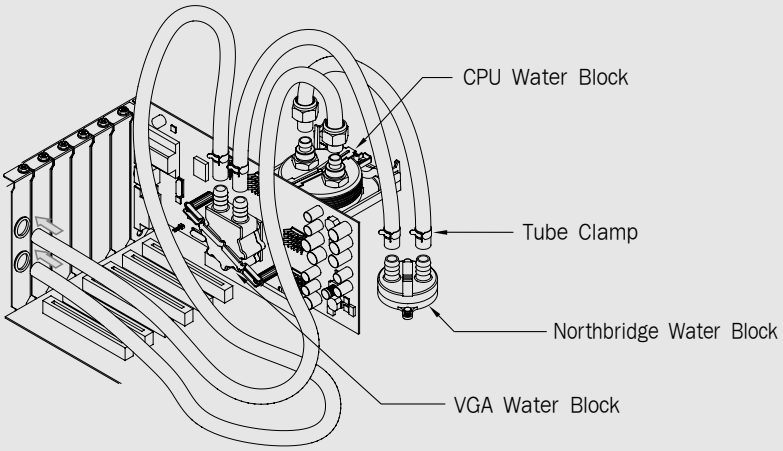



**What does Quick Coupling do ?**

The Quick Coupling Sockets allow quick connection and disconnection, while the incorporated valve prevents leaks during disconnection.

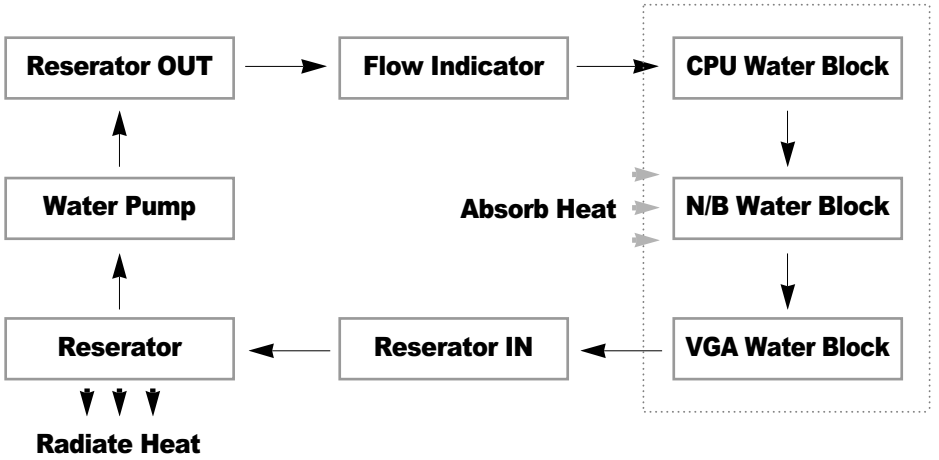
**Installing the Northbridge Water Block**

1) To install the Northbridge Water Block, connect as shown in the diagram below.
2) Remember to install Tube Clamps on the Silicone Tubes during installation.



## 5. 10 Confirm Proper Installation

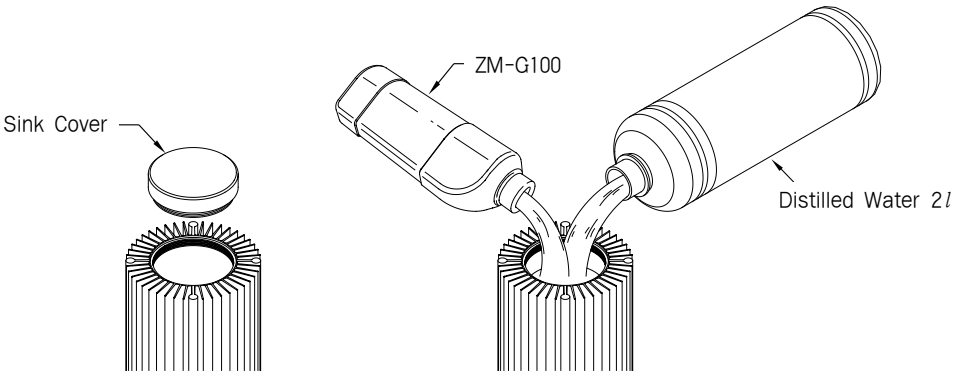
1) Check that the product is placed properly (i.e. conforms to section 5.2).
2) Confirm that the coolant circulation path is correct as shown below.
3) Lightly tug the silicone tube connected to each of the fittings to check for loose ends.




## 5. 11 Fill the Coolant

1) Take off the Sink Cover on top of the Reserator.
2) Fill with the provided coolant (ZM-G100) and two liters of distilled water.

**Note 1)** The provided coolant is a concentrate, and must be mixed down with distilled water for operation.
**Note 2)** Read the warning label on the coolant before use.
**Note 3)** Keep this product and its associated system away from children.



## 5. 12 Leakage Inspection and Test Run

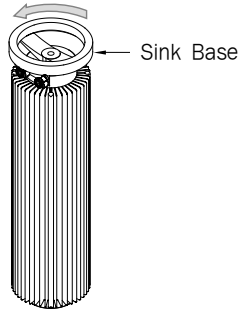
1) Turn off the PC's power completely before starting leakage inspection.
2) Turn on the water pump. If the coolant does not circulate properly, turn the pump on and off repeatedly to eliminate air bubbles.
3) Check each fitting for leaks. If there is a leak, circuitry and other components may short circuit and malfunction, so be careful.
4) If there is a leak, turn the pump off immediately, wipe the area that leaked clean with a paper towel, and reassemble the affected part.
5) While the pump is turned on, check the circulation status with the Flow Indicator.
   If the coolant is circulating well, the cap inside the Flow Indicator will shake rapidly.
6) Leave on for an hour and check for leaks.
7) If there are no leaks, turn on the PC's power and use the system.

## 6. Pump Replacement and External Water Pump Installation

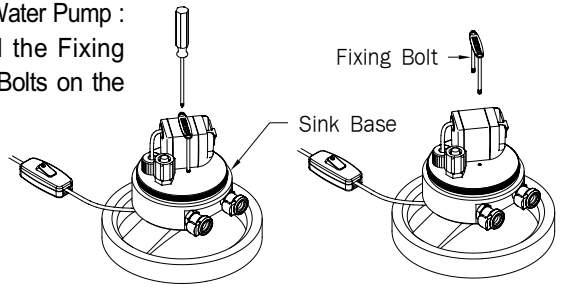
If the integrated water pump is broken or you need a water pump with higher capacity, you can replace the water pump or install an external water pump as shown below.

### 6. 1 Separate the Integrated Water Pump

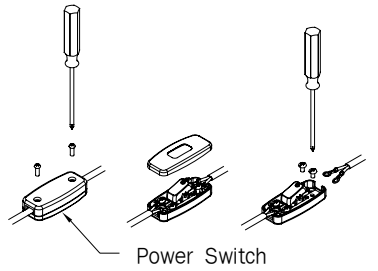
1) Separate the sink base : take off the sink base from the product as shown in the diagram.



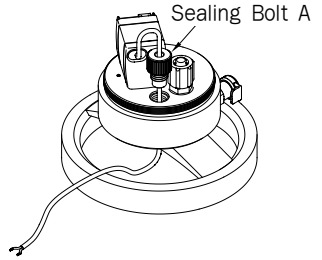

2) Unscrew the Fixing Bolts on the Water Pump : separate the Fixing Plate and the Fixing Bolts by unscrewing the Fixing Bolts on the Sink Base with a screwdriver.



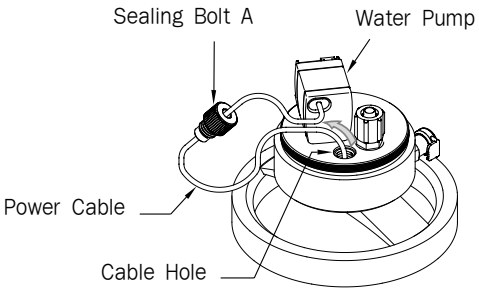

3) Disconnect the Water Pump Power Switch : separate the Power Switch from the power cable.




4) Take off the Sealing Bolt A : separate the Sealing Bolt A from the Sink Base.

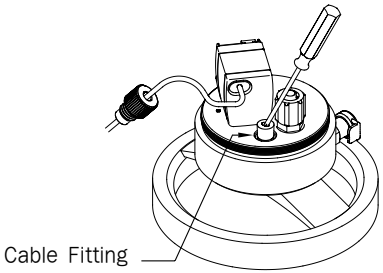


5) Take out the power cable :
pull the Water Pump power cable out through the Cable Hole.

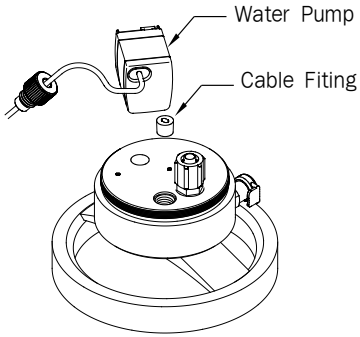



6) Remove the cable fitting :
take the Cable Fitting out of the hole as shown by using a screwdriver or an awl.

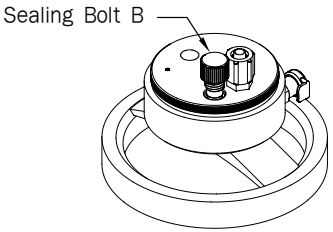
7) Remove the integrated water pump :
pull the Water Pump off the Sink Base as shown.



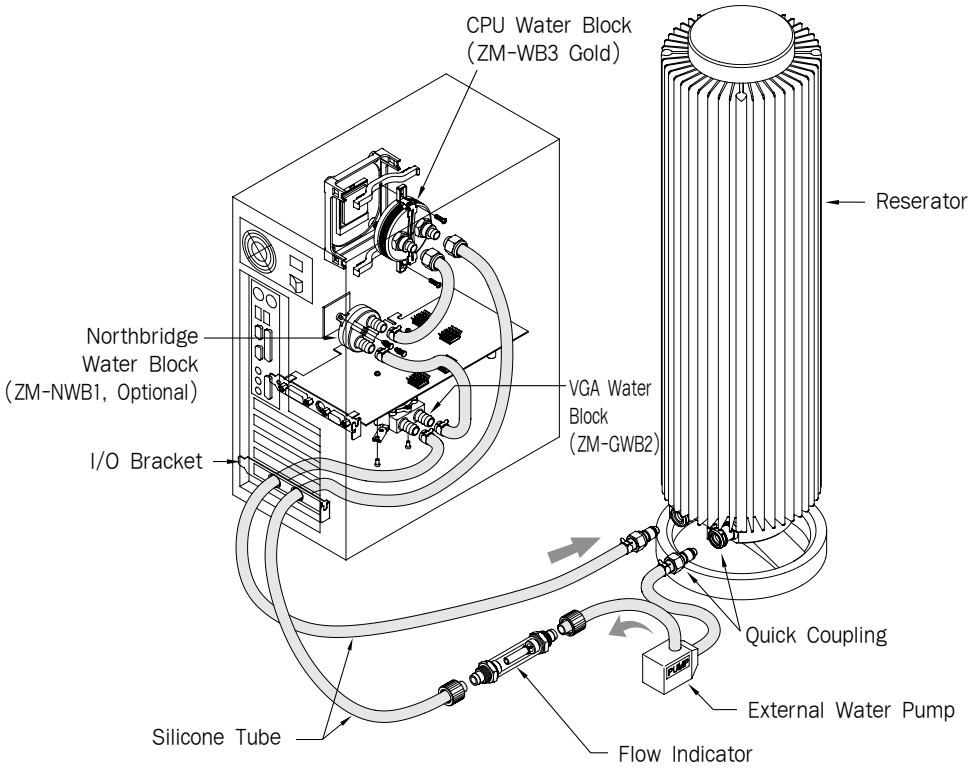

8) Put on the Sealing Bolt B :
after removing the Cable Fitting, screw on the Sealing Bolt B. Fasten tightly. If this is not done properly it may cause leakage.




9) Reassemble the sink base :
after all the steps are taken, reattach the Sink Base to the main body firmly. Take proper care in doing this as leakage may result if not done correctly.



## 6.2 Installing the External Water Pump



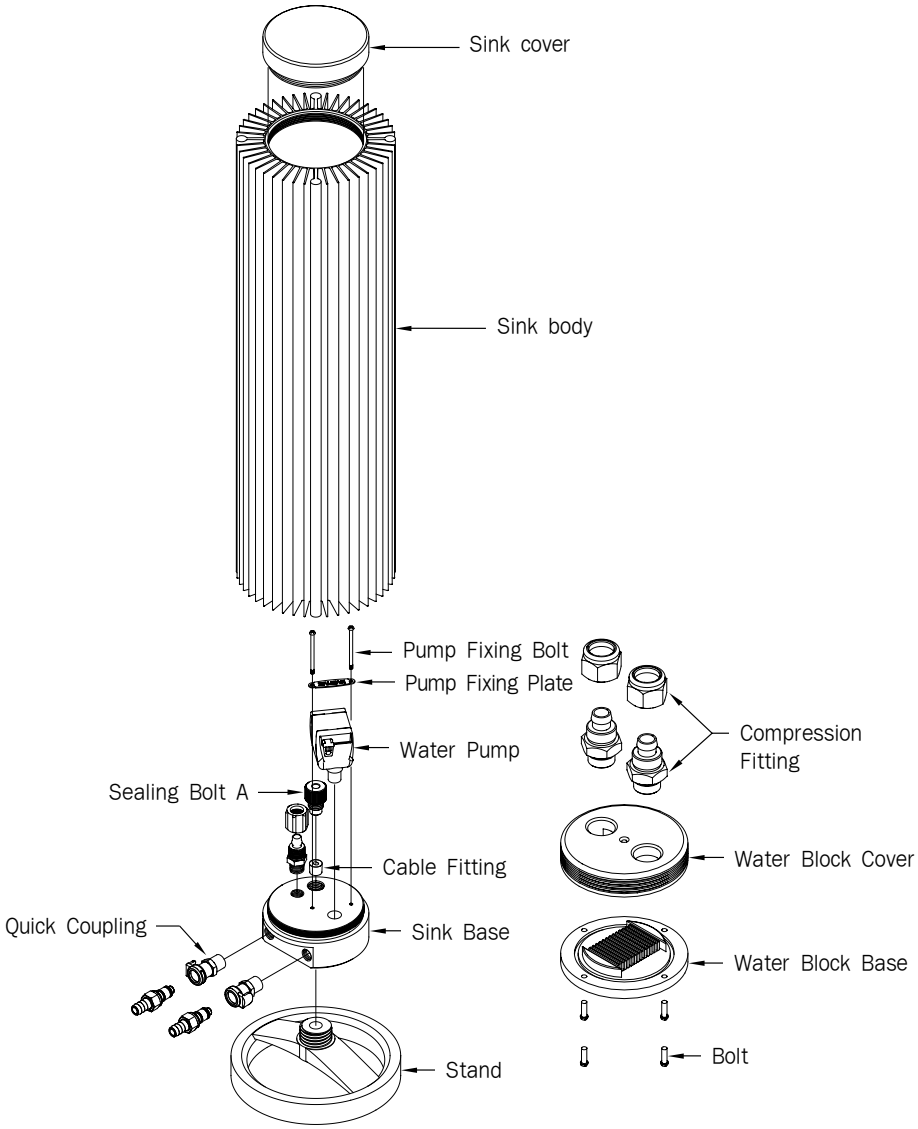

After determining the placement of the external water pump, check the components that create a path as shown above. It is recommended that the installation is done in such a manner.

## 6.3 Cautionary Notes on Choosing and Installing an External Water Pump

1) When installing an external water pump, confirm the coolant entrance and exit holes before connection.
2) Check that the chosen water pump's holes are compatible with the provided silicone tubes (12 x 8 mm).
3) Zalman Tech is not responsible for performance degradation or malfunction of a system that results from using an external water pump.

## 7. Exploded View






**Reserator** **ZM-WB3 Gold**

## 8. Zalman Noise Prevention System

When building a noiseless computer, use Zalman's Noiseless Power Supply, Northbridge Water Block, Noiseless Case Fan, and Heatpipe HDD Cooler for stable performance and a noiseless computing environment.

**Noiseless Power supply ZM400B-APS**

**Northbridge Water Block ZM-NWB1**

**Noiseless Case Fan**

**Heatpipe HDD Cooler ZM-2HC2**

## TNN (Totally No Noise) Computer Enclosure

The TNN 500AF is the world's first absolutely noiseless, anti-dust computer case for high-end systems that has been developed with Heatpipe Technology, HSC (Heat Source Contact) Power Technology, High Capacity Extrusion Technique, and FMS (Flexible Mounting Structure) Design Technology by ZALMAN Tech Co., Ltd.

The TNN 500AF package includes a high performance aluminum computer case with an absolutely noiseless cooling solution that does not require the use of a fan, making it ideal for :

1. Digital Audio Workstations (DAW) in broadcasting, recording, and postproduction studio control rooms.
2. Multi Media & Storage Servers for offices, educational facilities, and hotels.
3. Home Theater and Multi- Media Systems for living rooms.
4. High Performance Noiseless Workstations & Servers for SOHO (Small Office Home Office) systems.

For more information, please visit our website.